

FIG. 1

200

TRANSMIT A LOCATION REQUEST MESSAGE ONTO A NETWORK TOWARDS THE TARGET DEVICE, THE LOCATION REQUEST MESSAGE REQUESTING LOCATION INFORMATION IN RELATION TO THE TARGET DEVICE

201

RECEIVE A LOCATION SIGNATURE MESSAGE CONTAINING LOCATION INFORMATION ASSOCIATED WITH A PLURALITY OF DIFFERENT LOCATION INFORMATION SERVICES, EACH LOCATION INFORMATION SERVICE PROVIDING LOCATION INFORMATION HAVING A DIFFERENT LOCATION GRANULARITY IN RELATION TO THE TARGET DEVICE

202

PROCESS THE LOCATION INFORMATION FOR AT LEAST ONE OF THE LOCATION INFORMATION SERVICES IN THE LOCATION SIGNATURE MESSAGE TO DERIVE A LOCATION OF THE TARGET DEVICE IN RELATION TO AT LEAST ONE DESIRED LOCATION GRANULARITY

FIG. 2

210

DETECT A REQUIREMENT TO PROVIDE LOCATION INFORMATION ASSOCIATED WITH A TARGET DEVICE ON BEHALF OF A LOCATION REQUESTING DEVICE

211 RECEIVE LOCATION SIGNATURE MESSAGE

OR

212 RECEIVE LOCATION REQUEST MESSAGE

213

IN RESPONSE TO THE STEP OF DETECTING, CREATE A LOCATION SIGNATURE MESSAGE, THE LOCATION SIGNATURE MESSAGE CONTAINING LOCATION INFORMATION ASSOCIATED WITH A PLURALITY OF DIFFERENT ACCESSIBLE LOCATION INFORMATION SERVICES, EACH LOCATION INFORMATION SERVICE PROVIDING LOCATION INFORMATION HAVING A DIFFERENT LOCATION GRANULARITY

214

FORWARD THE LOCATION SIGNATURE MESSAGE ONTO THE NETWORK TO A LOCATION SIGNATURE MESSAGE DESTINATION

	<u>160</u> LOCAT	TION REQUEST MESSA	GE ·
310 LRM IDENTIFIER (E.G., TCP PORT, FLAG, ETC.)	311 SOURCE ADDRESS (E.G., LOC. REQ. DEVICE)	312 DEST. ADDRESS (E.G., TARGET DEVICE IDENTIFIER)	313 LOCATION INFORMATION DESTINATION (E.G., LRD, BEACON, TARGET)
314 TIME TO RETURN (E.G., TTL OR REV. TTL)	315 COMBINE OR SEPARATE LSM	316 LOCATION INFORMATION PARAMETERS (X1, X2, X3XN)	317 LOCATION INFORMATION MODIFICATION FACTORS (F1,F2,F3FN)

FIG. 4

162 LOCATION SIGNATURE MESSAGE							
320 LSM IDENTIFIER (E.G., TCP PORT, FLAG, ETC.)	321 SOURCE ADDRESS (E.G., TARGET DEVICE, NODE)	322 DEST. ADDRESS (E.G., LOC. REQ. DEV., NEXT HOP NODE, BEACON)	323 LOCATION INFORMATION DESTINATION (E.G., L.R.D.)		<u>324</u> LOC. REQUESTING DEVICE		
325 COMBINE OR SEPARATE LSM	326 LOCATION INFORMATION VALUES (Y1, Y2, Y3YN)	INFORMAT PARAMETERS	327 LOCATION INFORMATION PARAMETERS (X1, X2, X3XN)		328 LOCATION INFORMATION MODIFICATION FACTORS (F1,F2,F3FN)		

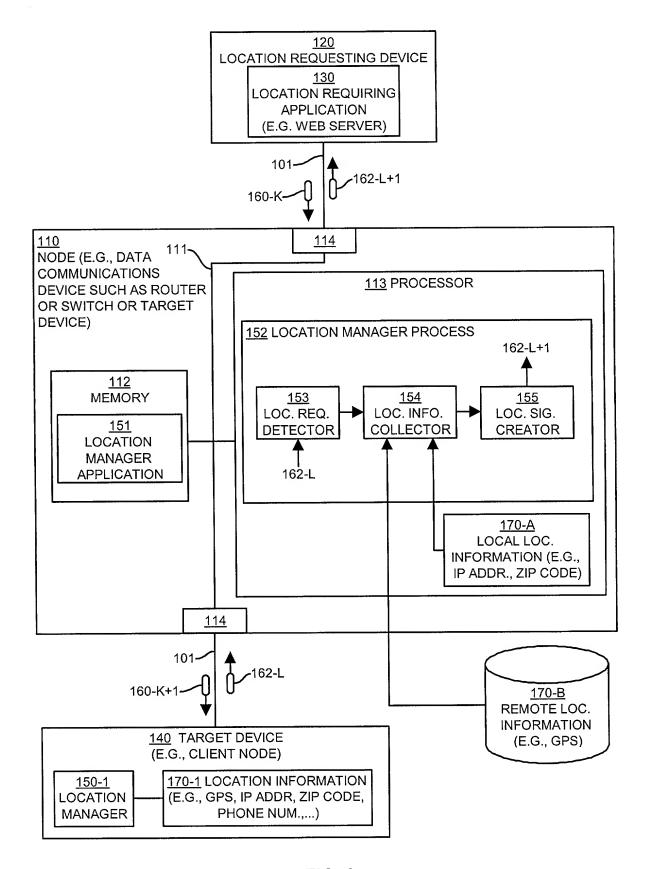


FIG. 6

221

CONFIGURE THE SPECIFICATION OF LOCATION INFORMATION PARAMETERS IN THE LOCATION REQUEST MESSAGE TO INCLUDE A SPECIFICATION OF A LOCATION PARAMETER FOR EACH TYPE OF LOCATION INFORMATION THAT IS TO BE RETURNED IN THE LOCATION SIGNATURE MESSAGE FROM A CORRESPONDING LOCATION INFORMATION SERVICE

222

SET A LOCATION INFORMATION PARAMETER FOR EACH TYPE OF LOCATION INFORMATION THAT IS TO BE RETURNED, IN A LOCATION SIGNATURE MESSAGE, FROM A CORRESPONDING LOCATION INFORMATION SERVICE.

223

SET MODIFICATION FACTOR(S) CORRESPONDING TO THE LOCATION PARAMETER(S) TO A VALUE BY WHICH A NODE IN THE NETWORK, THAT PROVIDES LOCATION INFORMATION CORRESPONDING TO THAT LOCATION PARAMETER IN THE LOCATION SIGNATURE MESSAGE, IS TO MODIFY THAT LOCATION INFORMATION

224

CALCULATE A VALUE FOR THE TIME TO RETURN IDENTIFIER BASED UPON A PROPAGATION DISTANCE BETWEEN THE LOCATION REQUESTING DEVICE AND THE TARGET DEVICE, THE VALUE FOR THE TIME TO RETURN IDENTIFIER INDICATING A METRIC THAT DETERMINES HOW CLOSE THE LOCATION REQUEST MESSAGE IS PROPAGATED IN THE NETWORK TOWARDS THE TARGET DEVICE BEFORE A LAST NODE IN THE NETWORK THAT RECEIVES THE LOCATION REQUEST MESSAGE CANCELS PROPAGATION OF THE LOCATION REQUEST MESSAGE AND PRODUCES A LOCATION SIGNATURE MESSAGE THAT IS RETURNED TO THE LOCATION REQUESTING DEVICE

225

SET THE VALUE OF THE TIME TO RETURN IDENTIFIER A TOTAL OF THE PROPAGATION DISTANCE BETWEEN THE LOCATION REQUESTING DEVICE AND THE TARGET DEVICE

OR

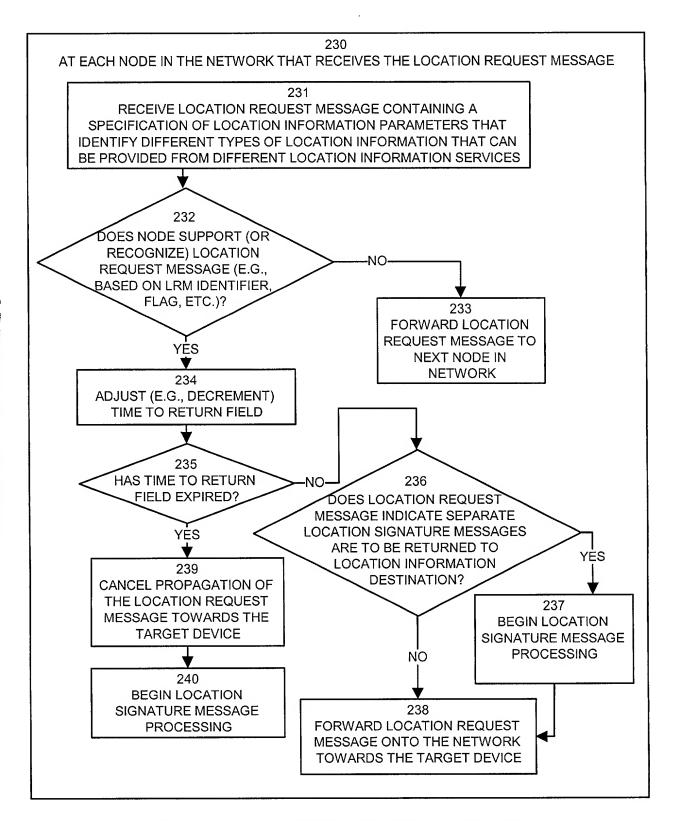
226

SET THE VALUE OF THE TIME TO RETURN IDENTIFIER TO LESS THAN A TOTAL OF THE PROPAGATION DISTANCE BETWEEN THE LOCATION REQUESTING DEVICE AND THE TARGET DEVICE

227

FORWARD THE LOCATION REQUEST MESSAGE ONTO THE NETWORK TOWARDS THE TARGET DEVICE SPECIFIED BY THE TARGET DEVICE IDENTIFIER ON A PATH OF AT LEAST ONE NODE IN THE NETWORK

GENERATION OF LOCATION REQUEST MESSAGE



249

RECEIVE A FIRST LOCATION SIGNATURE MESSAGE THAT INDICATES THAT LOCATION INFORMATION VALUES ARE TO BE COMBINE IN A SINGLE LOCATION SIGNATURE MESSAGE RETURNED TO A LOCATION INFORMATION DESTINATION

250
OPTIONAL: FILTER LOCATION INFORMATION PARAMETERS

251

FOR EACH LOCATION INFORMATION SERVICE ACCESSIBLE TO THIS NODE AND SPECIFIED BY A LOCATION INFORMATION PARAMETER IN A SPECIFICATION OF LOCATION INFORMATION PARAMETERS (E.G., IN FIRST LSM OR LRM)

252

OBTAIN LOCATION INFORMATION RELATIVE TO THE NODE FROM THE LOCATION INFORMATION SERVICE

253

INSERT THE LOCATION INFORMATION FROM EACH ACCESSIBLE LOCATION INFORMATION SERVICE INTO THE LOCATION SIGNATURE MESSAGE

NO DOES A LOCATION INFORMATION MODIFICATION FACTOR EXIST FOR THE LOCATION INFORMATION OBTAINED?

YĖS

255

OBTAIN LOCATION INFORMATION MODIFICATION FACTOR THAT CORRESPONDS TO THE LOCATION INFORMATION SERVICE AND/OR THE LOCATION INFORMATION OBTAINED

256

APPLY THE LOCATION INFORMATION MODIFICATION FACTOR TO THE CORRESPONDING LOCATION INFORMATION TO MODIFY THE VALUE(S) OF THE LOCATION INFORMATION

257

PLACE AN IDENTITY OF THE NODE INTO THE LOCATION SIGNATURE MESSAGE IN ORDER TO ASSOCIATE THE LOCATION INFORMATION OBTAINED BY THE NODE TO THIS NODE

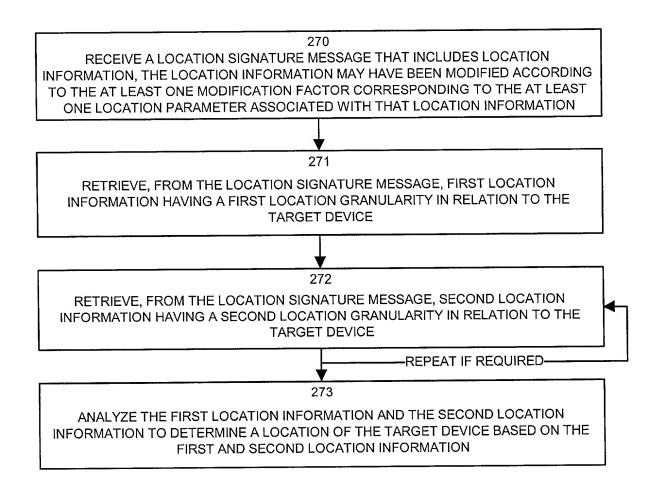
258

ASSOCIATE A NODE SIGNATURE TO THE LOCATION INFORMATION SUCH THAT THE IDENTITY OF THE NODE CAN BE VERIFIED BY A RECIPIENT

259

FORWARD THE LOCATION SIGNATURE MESSAGE ONTO THE NETWORK TO A LOCATION SIGNATURE MESSAGE DESTINATION (E.G., EITHER TO NEXT NODE, OR TO LOCATION REQUESTING DEVICE, OR TOWARDS BEACON)

LOCATION SIGNATURE MESSAGE PROCESSING



LOCATION SIGNATURE MESSAGE PROCESSING BY LOCATION REQUESTING DEVICE